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FLOWERING DOGWOOD

... an American wood

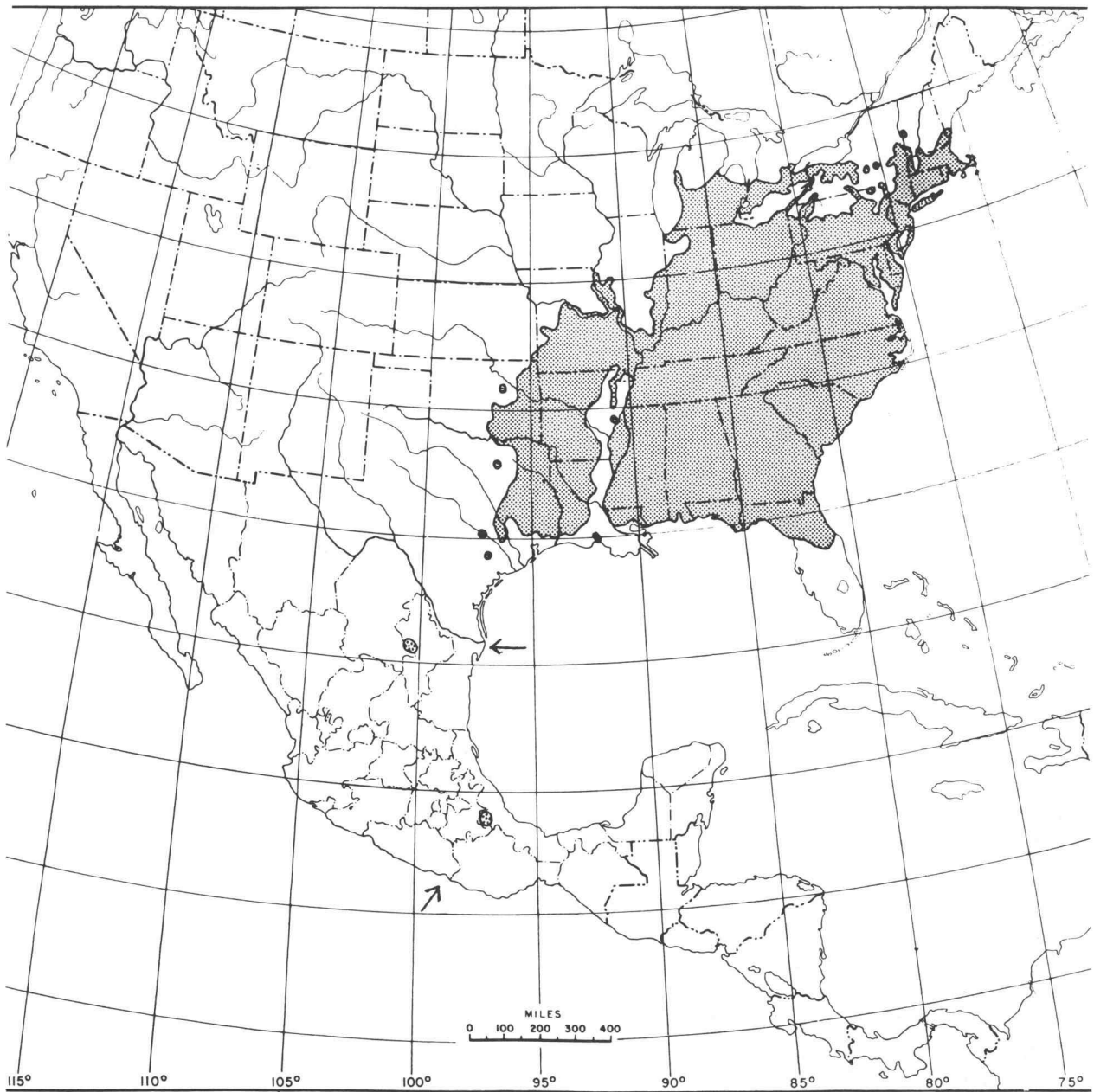
Flowering dogwood is a small, slow-growing, often crooked tree, which occurs over much of the eastern United States. The wood is very hard, strong, and highly shock resistant. With continuous use, dogwood becomes very smooth, a quality that makes it valuable for shuttles, spools, small pulleys, jeweler's blocks, mallet heads, and other articles requiring a hard, close-textured, smooth wood.



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Figure 1.—Natural range of flowering dogwood.

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FLOWERING DOGWOOD

. . . an American wood

Arnold L. Mignery¹

DISTRIBUTION

Flowering dogwood (*Cornus Florida* L.) occurs over much of the eastern United States. Its range extends from southwestern Maine through southern Ontario and Michigan to southeastern Kansas and eastern Texas to north-central Florida (fig. 1). A variety occurs in the mountains of eastern Mexico.

Flowering dogwood rarely, if ever, occurs in pure stands. Throughout its range it is found in association with many other hardwoods and conifers, almost always as a subordinate tree in the forest understory. It is widely planted as an ornamental, but commercial production for wood is concentrated in the southern Appalachian and southern Mississippi Valley regions with Mississippi, Alabama, and Tennessee leading producers.

The species occurs on soils varying from deep, moist soils along minor streams to light, well-drained upland soils. The most important great soil groups within the range of dogwood are red and yellow podzolic, gray-brown podzolic, brown podzolic, and alluvial soils. Growth is best on soils of medium water-holding capacity. Seedling survival is low and the species is virtually absent on heavy, poorly drained soils. Flowering dogwood is of interest as a soil improver. Its leaf litter, in addition to being an important source of calcium, decomposes more rapidly than that of other species, thus making its mineral constituents more readily available.

Precipitation within flowering dogwood's range varies from 30 inches per year in the north to 80 inches in the southern Appalachians. Average annual temperature is 70 degrees F. in the south and 45 degrees in the north, with temperature extremes of 115 to -30 degrees. Growing season ranges from 160 days in southern Michigan to 300 or more in Florida.

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NOTE.—This publication supersedes unnumbered publication *Flowering Dogwood*, issued 1945.

DESCRIPTION AND GROWTH

Flowering dogwood is a small, slow-growing, often crooked tree with a low, dense crown. The bark is a dark red-brown; on older trees it breaks into small, generally quadrangular blocks (fig. 2). Maximum tree size under favorable conditions is about 40 feet in height and 18 inches in diameter. At the northern limits of distribution the species may become a branchy shrub. Best development occurs in association with other hardwoods.

The small, bisexual, four-part, yellowish flowers borne in terminal clusters in the spring before the oppositely arranged leaves appear are surrounded by four snow-white, petallike bracts. The bracts form "flowers" 2 to 4 inches across and provide a spectacular display in the springtime. However, the tree is attractive throughout the year. In summer it becomes relatively obscure, but in autumn flowering dogwood puts on a double show of brilliant colors. Glossy red fruits, contrasting first with the green foliage and then with the rich red-orange fall foliage, make a scene of great beauty. Even after the leaves fall, the knobbed, upcurving branchlets provide a graceful tracery against winter skies. The fruits, bright red drupes about 1/2-inch long, are readily eaten by wild birds (fig. 3). Occasionally trees with salmon-colored or light-pink bracts are found in nature. Pink and red flowering dogwoods and other cultivars with special ornamental characteristics are commonly propagated from clones by commercial nurseries. Because low winter temperatures sometimes kill the flower buds it is recommended that ornamental plantings be restricted to areas where temperatures normally do not fall below -15 degrees F.

A good seed crop occurs about every 2 years. Dispersal is by gravity and by birds and other animals. Fresh seed will not germinate without natural overwintering on the ground or, if collected, a period of moist cold storage. Flowering dogwood sprouts profusely from stumps and also reproduces by natural layering. Cuttings may also be rooted; this is of particular importance in propagating ornamental varieties.



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Figure 2.—Bark of flowering dogwood.

Flowering dogwood is very tolerant of shade and carries out maximum photosynthesis at one-third of full sunlight. It is tolerant of high temperatures but is quite susceptible to drought. In southern forests dogwood leaves are often the first to wilt in dry weather. Continuing drought may cause leaves to fall and tops to dieback. Because of its thin bark, the species is readily injured by fire, but its profuse sprouting may later increase the amount of dogwood in damaged stands. Flowering dogwood is also quite susceptible to flooding.

In forest stands dogwood is relatively free of insects and disease. When the tree is cultivated as an ornamental, several pests may cause trouble. The dogwood borer is the most destructive insect pest of the species. Other damaging insects are flat-headed borers, dogwood scale, club gall, and twig borer. Of the fungus diseases, *Elsinoë* spot anthracnose often damages the beauty of flowers, leaves, young shoots, and fruit. *Nectria* cankers sometimes occur on the trunk and limbs, and crown gall, a soil-borne bacteria occasionally attacks the lower trunk and roots. Physical injuries from lawnmowers and unnecessary cutting and bruising usually provide the entry points for insects and disease.

COMMON NAMES

The name of flowering dogwood is frequently shortened to dogwood. Other less common names are cornel and boxwood.

RELATED COMMERCIAL SPECIES

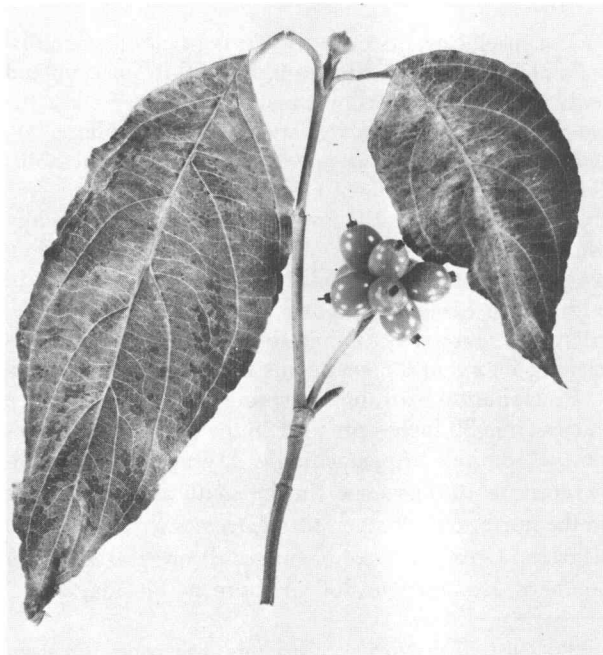
Sixteen species of *Cornus* are native to the United States, including eight tree size, six shrubby, and two herbaceous species, but only flowering dogwood is commercially important.

SUPPLY

There are no recent estimates of the total stand of flowering dogwood within its entire natural range. In six southern States where production is concentrated, a volume of 99.8 million cubic feet in trees 5 inches in diameter breast height and larger is shown by inventories made between 1962 and 1971. A supply of well over 1 million cords is thus indicated within the six States. Much of this is probably too scattered to be commercially available, but the supply is considered more than adequate to meet domestic and export demands.

PRODUCTION

Most flowering dogwood is cut into short logs or bolts by widely scattered, small mills for manufacture into shuttle blocks. This makes accurate data on total cut difficult to assemble, and consequently production figures are fragmentary and largely based on estimates. In 1923, the estimated annual consumption was 15,500 cords. During World War II about 16,600 cords per



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Figure 3.—Leaves and fruit of flowering dogwood.

year were produced. With a continuing decline in the use of dogwood for shuttles, it has been estimated that the current cut is approximately 2,500 cords per year.

CHARACTERISTICS AND PROPERTIES

The sapwood of flowering dogwood, which often makes up almost the entire stem, varies in color from a flesh-colored, pinkish white to light pinkish brown. Heartwood is reddish brown to chocolate brown. The wood has a fine, uniform texture and is without a characteristic odor or taste. Annual growth rings, usually $\frac{1}{16}$ to $\frac{1}{8}$ -inch wide, are distinct but not sharply delineated. Dogwood is very heavy (average weight is 51 pounds per cubic foot at 12-percent moisture), very hard, strong, and not stiff but with a very high resistance to shock. It is difficult to cut and shape and not easy to glue. The wood is hard to season either in the air or in a kiln and shrinks greatly, but when properly dried holds its shape well. With continuous wear, flowering dogwood becomes extremely smooth, a quality which makes it of great value for textile shuttles.

PRINCIPAL USES

Virtually all the dogwood cut is used in the manufacture of shuttles for textile weaving where the need for a material that will stay perfectly smooth is evident. It is still widely used for shuttles although this use is lessening every year. Within the past 15 years plastic shuttles have replaced approximately 60 percent of those formerly made of dogwood. Small amounts of flowering dogwood are used for articles using a hard, close-textured, smooth wood capable of withstanding rough use. Examples are spools, small pulleys, mallet

heads, jeweler's blocks, and turnpins for shaping the ends of lead pipes. In earlier times dogwood root bark was used as a fever medicine. A scarlet dye was also made from the roots.

REFERENCES

- Cox, R. S., and J. W. Heuberger.
1953. Control of spot anthracnose and Septoria leaf spot of flowering dogwood. *Nat. Hort. Mag.* 32: 70.
- Harlow, W. M., and E. S. Harrar.
1968. Textbook of dendrology. American Forestry Series. Ed. 5, 512 p., illus. New York: McGraw-Hill Book Co.
- Hepting, G. H.
1971. Diseases of forest and shade trees of the United States. U.S. Dep. Agric., Agric. Handb. 386, 658 p.
- Panshin, A. J., and C. de Zeeuw.
1970. Textbook of wood technology. Vol. I—Structure, identification, uses, and properties of the commercial woods of the United States and Canada. Ed. 3, 705 p., illus. New York: McGraw-Hill Book Co.
- Pease, Roger W.
1953. Growing flowering dogwood from softwood cuttings. *Nat. Hort. Mag.* 32: 71-73.
- USDA Agricultural Research Service.
1970. Growing the flowering dogwood. U.S. Dep. Agric., Home and Garden Bull. No. 88, rev., 8 p., illus.
- USDA Forest Service.
1948. Woody-plant seed manual. U.S. Dep. Agric., Misc. Publ. 654, 416 p., illus.
- USDA Forest Service.
1965. Silvics of forest trees of the United States. U.S. Dep. Agric., Agric. Handb. 271, 762 p., illus.
- University of Tennessee, Department of Horticulture and Agricultural Biology.
1969. The flowering dogwood in Tennessee. Univ. of Tenn. Agricultural Extension Service, Publ. No. 589, 18 p., illus.
- de Vos, Francis.
1953. The flowering dogwood. *Nat. Hort. Mag.* 32: 55-56.